

Audit Report

Riverside Police Department

***Public Safety Communications
Center***

March 2014

AU14-07

City Manager
Scott C. Barber

Internal Audit Manager
Cheryl L. Johannes

Office of the City Manager
Internal Audit Division
Riverside, California

REPORT SUMMARY



In accordance with the Internal Audit Work Plan for Fiscal Year 2013/2014, a performance audit was conducted of the Public Safety Communications Center, to evaluate efficiency and effectiveness of activities and ensure compliance with City and Department policies/procedures and regulatory agencies.

The City's Public Safety Communications Center¹ is a civilian staffed 9-1-1 center that has provided service for the Police and Fire Departments since 1984, when the Dispatch Centers for both Departments merged to form one centralized answering point for all emergency service requests/calls. The Center is fully compliant with the Enhanced 9-1-1 (E911) standards required by the Federal Communications Commission² and is the primary Public Safety Answering Point (PSAP) for the City of Riverside.

Performance Goal The Center met its goal of answering at least 90% of emergency calls within 10 seconds during fiscal years 2011, 2012 and 2013. Overall, the Center answered 94% of emergency calls within 10 seconds.

Dispatcher Staffing Center staffing has remained flat for the past several years, while call volume has steadily increased. Like most PSAPs, volume of calls is uneven throughout the day; our assessment indicates *that staffing levels do not match workload/call volume throughout the day.*

Mandatory Overtime In the past three fiscal years, total overtime has increased from 10% of total personnel costs in FY2011 to 14% in FY2012 and FY2013 respectively. The Center supplements staffing shortages with mandatory overtime. Call center/communication center experts agree that overtime should not be a strategic use of resources. According to the January 2012 issue of *Public Safety Communications*, "Excessive use of overtime is a major contributor to staffing and retention problems in the industry...loss of control over personal time contribute more to employee 'burnout' than the emotionally demanding nature of the job." ***Excessive reliance on overtime may be an indication that management is using a reactive approach rather than a proactive approach to handling the workload.***

Technology Advances As the ever-changing evolution of technology advances, it introduces numerous challenges in processing the new means of communication for emergency services. Wireless devices provide non-voice communication (texting) for emergency situations and requests for assistance. The Center's recently upgraded 9-1-1 system is designed to handle non-voice communication services, such as routing of text messages to the correct PSAP, timely delivery of these messages and providing device location as well as a callback number to the PSAP.³ The Center will implement non-voice (texting) service when the California NG9-1-1 office provides further guidance and policies.

¹ For this report we will refer to the Riverside public safety dispatch center as the "Center".

² Enhanced 9-1-1 systems have the ability to triangulate cellular 9-1-1 call locations to within 50 meters.

³ For more specific operational and technical information, refer to the October 2013 NENA document *Handling Text-to-9-1-1 in the PSAP*.

OBJECTIVES, SCOPE and METHODOLOGY

Objective

Our audit objective is to assess the efficiency and effectiveness of activities and ensure compliance with City and Department policies/procedures and regulatory agencies.

Scope and Methodology

The review was conducted during the months of October through December 2013, and included review of data from January 2011 through September 2013. To address the objectives and as part of our assessment of risk, we:

- Reviewed the Public Safety Communications Division Standard Operating Procedures (SOP);
- Reviewed the various job descriptions for various City Public Safety Dispatcher positions;
- Participated in a four-hour “sit-along” with dispatch personnel to gain an understanding of call taking and the dispatch process;
- Reviewed the dispatcher staffing/scheduling model and discussed the staffing process with the interim Communications Center manager;
- Reviewed dispatcher training standards to include POST Training for a dispatcher certificate;
- Reviewed Riverside Public Safety Dispatcher training records; determined recertification compliance;
- Reviewed the 9-1-1 system and CAD system functionality and reports/statistics available to monitor call handling and dispatch performance;
- Reviewed the State’s Revenue and Taxation Code - Emergency Telephone Users Surcharge Law;
- Reviewed California 9-1-1 Emergency Communications claims submitted by the City’s PSAP for funding of equipment and other related expenditures for the new Communications Center;
- Reviewed documents from the California Technology Agency – ECaTS;⁴
- Analyzed operating expenditures to include trends in staffing levels and related overtime expenditures for the past three fiscal years;
- Reviewed the *National Emergency Number Association* (NENA) standards for statistical performance comparison;
- Reviewed the *Association of Public Safety Communication Officials* (APCO) for definitions, performance and staffing guidelines, and related articles;
- Reviewed related publications (*Public Safety Communications; Dispatch Magazine Online*), for operational standards and best practices; and
- Reviewed the *California 9-1-1 Strategic Plan* (published July 2010) to understand new technologies in delivering enhanced 9-1-1 services.

⁴ ECaTS is a new California Emergency Call Tracking System utilized statewide by PSAPs. The system was installed on Riverside’s PSAP 911 system to track and accumulate various E911 call statistics (i.e., volume of calls; speed to answer, etc.) in order to measure actual performance against standards.

BACKGROUND

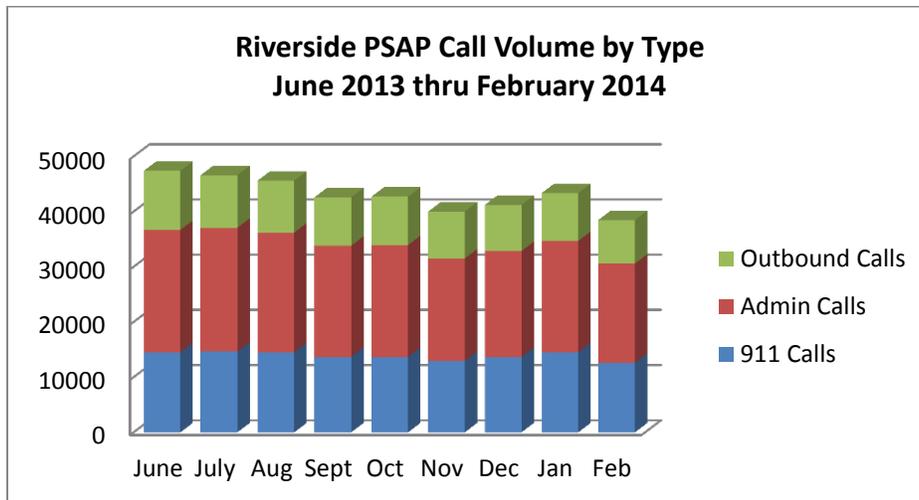
The Riverside Police Department operates the Public Safety Communications Center as a public safety answering point (PSAP) that serves the City of Riverside. Calls to 9-1-1 from a Riverside address or a cell phone tower located in Riverside are routed to the Communications Center. The Center also receives non-emergency calls on a non-9-1-1 phone number. The Center is integral to front line support in the Police and Fire Departments.

The Center operates 24 hours per day, 7 days per week. Its main duties include:

- Answering emergency and non-emergency calls for police and/or fire service;
- Dispatching police, fire and medical aide⁵ units to incidents that require a response; and
- Transferring and/or directing calls that do not require a police or fire response to the proper agency.

Only certified dispatchers are assigned to answer emergency calls; all are employed by the City of Riverside. They are represented by the SEIU (bargaining unit) and related MOU.

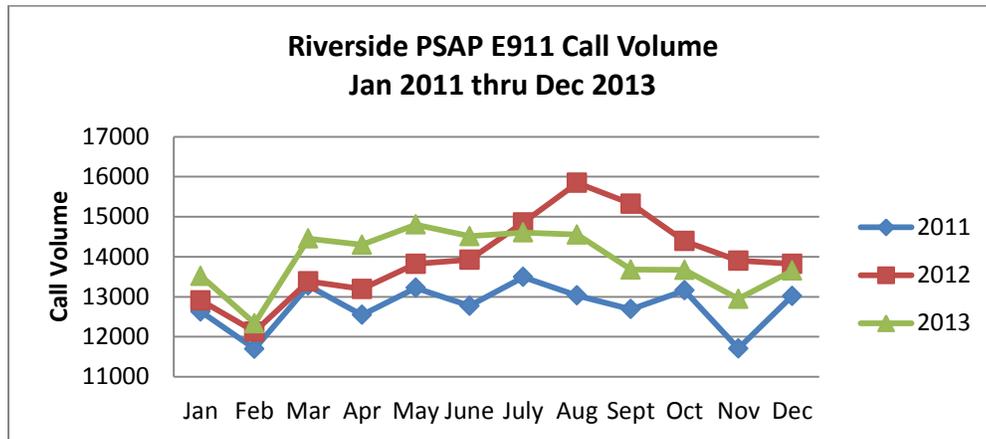
In calendar year 2012, the Center answered a total of 442,358 calls; in 2013 the Center saw a minor decline, answering 405,894 calls. On average, 40% were received via the 9-1-1 lines, while 60% were received via the non-emergency line (951-354-2007).



9-1-1 calls are received on the dedicated 9-1-1 line. Admin Calls are 7-digit dialed calls that are received either from the public or other department personnel on the “in-house” or “ring-down” lines. Outbound calls are phone calls originated from the center whether they are calling back on a 9-1-1 hang up or calling out for a tow truck or to contact a reporting party. Total calls on average for the nine months in the above graph are close to 40 thousand calls per month.

⁵ The City contracts with American Medical Response (AMR) for emergency medical/ambulance service.

Over the past several years the Center has seen a trend of 85/15 percent Police/Fire incidents generated in the CAD system. The chart below depicts 9-1-1 call volume from January 2011 through December 2013 (36 months).



Source: RPD ECATS

The 9-1-1 phone system does not distinguish between Police related and Fire related calls; all incoming calls are routed to either Police or Fire dispatchers based on caller information (type of emergency). Dispatchers then create a Police and/or Fire/EMD “incident”⁶ in the CAD system.

Equipment

In order to manage the emergency response process, the Communications Center maintains an elaborate system of time and voice recordings that can be used to assess performance, monitor operations and maintain appropriate staffing levels. The primary tool for processing this information is the Computer Aided Dispatch (CAD) system maintained and operated by the Police Department.

The Center is partially funded by the City’s General Fund as well as by telephone service provider user fees. State law⁷ provides for a fee⁸ to be charged per month to subscribers of telephone service providers, including landline, wireless and VoIP. Currently this 9-1-1 surcharge funds 475 official PSAPs in California. The 9-1-1 revenues pay for the network and infrastructure that support 9-1-1 services and for ongoing support for refreshing equipment, the network and the database information that appears at each site when someone calls “9-1-1.”

In preparation for the move of the Communications Center from the Orange Street Police headquarters to the Magnolia Precinct, the department utilized the States’ 9-1-1 Surcharge Fee to fund the cost of a 16 position Viper 9-1-1 telephone system (with MIS and Netclock). The State selected AT&T to install and maintain (for 48 months) the new system, to include training, at a cost of \$565K (the City had no financial obligation). In addition, the department utilized the States’ 9-1-1 Surcharge Fee to fund the

⁶ Any call which results in a response by Police, Fire or EMS requires an incident in the CAD system. A single call can create one or multiple incidents.

⁷“The Board of Equalization (BOE) administers the Emergency Telephone Users Surcharge Law. The surcharge is imposed on amounts paid by every person in the State for intrastate telephone communication service. The service supplier (or billing aggregator authorized by a service supplier) shall collect the surcharge from each service user and remit to the State the amount of the surcharge.”

⁸ The current surcharge rate is one-half of one percent (0.50%), charged to subscribers of telephone service providers as a tax on monthly service bills.

cost of new furniture for the Communication Center (\$80K). The additional relocation cost of \$1.2 million was funded by the City's Redevelopment entity. The move to the new Communication Center was completed in April 2013.⁹

Funding was provided in 2004 for the purchase and maintenance of new Computer Aided Dispatch (CAD) and Mobile Data Computer (MDC) systems from Motorola. Following the construction of the new Communications Center, an upgrade to the current CAD and MDC systems and migration to Motorola's PremierOne™ CAD application (at a cost of \$798,279) was approved in November 2013 by the City Council.

Personnel, Training and Certification

Riverside PSAP Staffing	Actual as of Feb. 2014
Manager	1
System Analyst	1
Supervisor	6
Dispatcher II	26
Dispatcher I	2
Trainees	9
Part-Time ¹⁰	7
Total	52

The Public Safety Communications Manager position has not been filled with a permanent manager since January 2005. Since that time the position has been filled on rotation by sworn officers or civilian personnel. The current position has been under-filled with a civilian Interim Manager since May 2012. The Department/Division's goal is to permanently hire a Communications Manager in the near term.

All dispatchers (including Communications Supervisors) are trained as call-takers; answering emergency calls, gathering and recording information from the caller to confirm the location, and determining the nature of the emergency and type of response needed. Call-takers then

direct the 9-1-1 caller/information to a Dispatcher through the CAD system. The Dispatcher focuses on call prioritization and communication with field units.

On-the-job training, certificate programs and certification courses are important ways in which emergency dispatchers develop necessary communication and management skills. "Effective initial training is critical for public safety dispatchers to acquire the necessary knowledge, skills, and abilities in order to provide quality service to the public and the law enforcement agencies they serve."¹¹

The *California Public Safety Dispatchers' Basic Course* offered by the Commission on Peace Officer Standards and Training (POST) is the entry-level training requirement for dispatchers employed by the City. The course has a minimum hourly requirement of 120 hours, which is divided into 14 individual topics, called Learning Domains. The Learning Domains contain the minimum required foundational information for given subjects. Cost for the three week course is approximately \$343 per attendee. Refer to *Appendix A* for a list of POST Dispatcher Course Curriculum Learning Domains.

POST update training is required every two years. In addition, CPR, EMD and CLETS certification is required with recertification every two years. The Police Department's Support Services/Training Division maintains all Communications Center staff training documentation. Human Resources also provide required training, such as Sexual Harassment, Violence in the Workplace, etc. Based on records provided by the RPD Training Division and the Communications Center Training Supervisor, all dispatcher certifications are current.

⁹ We did not audit the acquisition and cost justification for technological equipment and systems or related contracts with the vendor. We did not audit internal controls of the Centers' various systems during this review.

¹⁰ The 7 part-time (hourly) dispatchers equates to 1.75 FTEs.

¹¹ TRAINING SPECIFICATIONS FOR THE PUBLIC SAFETY DISPATCHERS' BASIC COURSE 2011

Performance Standards

Because every call is an unknown potential crisis situation, every call must be answered as quickly as possible. The NENA recommended standard for the speed of answer at a PSAP is contained in the NENA Operational Standard 56-005, paragraph 3.1¹².

The Center continually exceeds the NENA standard (service-level goal); on average, 94% of all 9-1-1 calls were answered within 10 seconds during calendar years 2011, 2012 and 2013.

Abandoned Calls

Cellular phone users are a major contributor to abandoned 9-1-1 calls to the Center. According to national news reports, the worst “offenders” appear to be ‘deactivated’ cell phones. These are cell phones that no longer have a cellular plan and are no longer registered to anyone but can still make 9-1-1 calls when there is a battery charge. In many cases these are old cell phones that have been given to children as a toy. If they have a battery charge, they can still make emergency calls. These calls show up with a 9-1-1 prefix, have no registered owner information, and cannot be called back making it nearly impossible to find the call location. Unintentional “pocket dialing” (someone sits on their phone) is also a contributor to abandoned calls.

Current Center practice for an abandoned call or a 9-1-1 hang up from a business (that is not from a PBX line) or from a residence is to call back the number to verify if there is an emergency or if there is a need for police/fire/ambulance service. If there is no answer, the dispatcher will enter a call for service, using the type code of 911HU, to be dispatched and indicate in the call text that there was no answer on call back. If the dispatcher receives a busy signal, he/she will enter a call for service, indicate in the call text that the line was busy, and attempt an emergency break through via the operator.

If the Center receives a hang up or abandoned call from a payphone, the dispatcher is unable to call back; no call is entered for service. If there were sounds of an emergency (i.e. screaming, yelling, sounds of a struggle, etc.) a Police unit would be dispatched for an area check at the payphone.

If a dispatcher receives an abandoned call or a 9-1-1 hang up from a cell phone, the dispatcher will attempt a call back to verify if there is an emergency. If there is no answer, and there was nothing heard on the initial call to indicate an emergency, no action is taken. If there is some sort of audio that was heard to indicate there is an emergency, the dispatcher enters a call for service using the Latitude/Longitude and dispatches a Police unit for an area check. If the dispatcher believes there is a potential emergency, he/she will begin a phone trace through the cellphone provider to obtain the subscribers name and address so that the appropriate handling agency (Police, Fire, and EMR) can be dispatched.

According to statistics extracted from ECaTS for September 2013, 1,535 or 11% of 9-1-1 calls to Riversides’ PSAP hung up before being answered. The NENA recommends each PSAP develop a standard and consistent policy for documenting and/or responding to abandoned calls. The above noted current

¹² “Ninety percent (90%) of all 9-1-1 calls arriving at the PSAP shall be answered within ten (10) seconds during the busy hour (the hour each day with the greatest call volume). Ninety-five percent (95%) of all 9-1-1 calls should be answered within twenty (20) seconds.”

practices by the Riverside PSAP for an abandoned call or a 9-1-1 hang up have not been documented and formalized in the Center’s Standard Operating Procedures (SOPs).

Staffing the Center

In order to provide quick response to emergency calls the Center must have an optimum number of employees answering calls at any given time of the day and night. The optimum number should be based on the predicted number of incoming calls, the types of emergencies, and the estimated length of time each call should take to handle. In addition the two radio channels must be maintained 24/7. To meet the NENA 9-1-1 call answering performance goal of 90% of calls answered within 10 seconds, the Communications Center has established four shifts using a 3/12 work schedule. However, staffing workload is not scheduled by shifts; scheduling of staff is done by time periods within the 24 hour day:

Monday – Thursday	Saturday
0700-1100 – 7 dispatchers	7 dispatchers
1100-1900 – 10	9
1900 – 0200 – 9	10
0200-0700 – 6	6
Friday	Sunday
0700-1100 – 7	7
1100-1900 – 10	9
1900-0200 – 10	9
0200-0700 – 6	6

The Center uses no documented formula¹³ or software to determine the number of staff needed or to schedule staff among shifts. According to the Interim Communications Center Manager, staffing levels for each day are determined based on the above requirements (minimum staff needed during different time periods of the day), anecdotal data, experience and instinct.

The Center uses an Excel spreadsheet which allows the supervisor or manager to distribute personnel onto different shifts and days of the week, while simultaneously seeing the resulting number of staff that would be scheduled to work each hour of the day, based on established experience-based minimums. When the monthly staffing schedule is created (i.e., by the 15th of the current month for the next month), requests for time off for vacations or other planned time off are included. Unplanned time off (sick leave, FMLA, jury duty, etc.) is usually filled with “mandatory” overtime rather than voluntary overtime.

We performed an analysis of hourly 9-1-1 call volume data for the month of September 2013. Refer to the following chart which shows the correlation of actual dispatchers/dispatchers working and call volume by hour.¹⁴ Total number of calls for the month was 13,680.¹⁵ Based on the graph, it appears the Center is overstaffed in the early morning hours (between midnight and 6am) and understaffed during early evening hours (5pm – 9pm) relative to workload/call volume. However, the early morning hours are utilized by the dispatchers for administrative activities that cannot be completed during the daytime

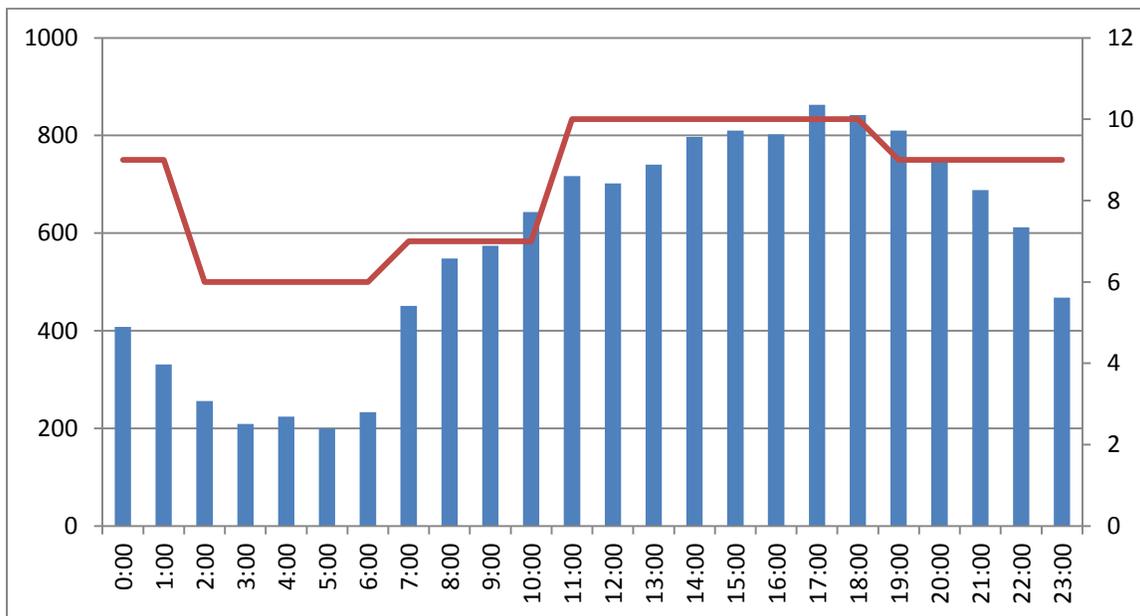
¹³ According to a 2005 Association of Public Safety Communications report, the majority of large communications centers use staffing formulas or an Erlang model (developed from queuing theory). The Riverside PSAP is considered a “very large” California PSAP.

¹⁴ Source: Center’s 911 VIPER phone system; report was generated on 10/22/2013 at the request of Internal Audit.

¹⁵ Of the 13,680 calls to the PSAP in September 2013, 1,535 or 11%, were abandoned calls.

hours when calls are at the highest levels. The chart below indicates that more dispatchers are needed during the busiest hours of call intake to ensure timely response to emergencies.

September 2013 9-1-1 Call Volume per Hour and Related Staffing Per Hour



The **blue bars** in the above chart indicate the **hourly call volume**; the **red line** indicates the number of **dispatchers/dispatchers scheduled hourly**. As noted in the chart, the heaviest volume of incoming 9-1-1 calls for this example (month of September 2013), was between the hours of 11am and 8pm, with the highest volume at 5pm. During this high period of call volume, 10 dispatchers/dispatchers were on duty with the exception of the last two hours (7pm – 9pm), when staffing was reduced to 9 dispatchers/dispatchers. The above hourly call volume trends are utilized to develop staffing.

Communications Centers face a number of challenges in determining the right number of staff to effectively handle 9-1-1 calls. These challenges include significant variation in the number of calls received by hour of day and day of week; the need to schedule staff 24 hours a day, 365 days a year; and the unpredictability of emergency incidents and staff absences.

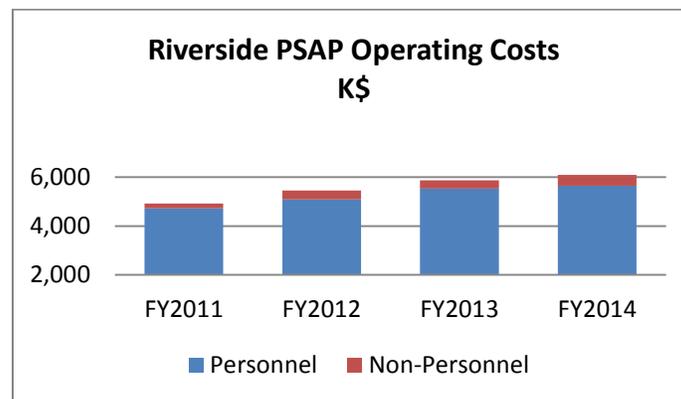
Our review of industry literature and generally accepted staffing models shows that there are several factors to consider in estimating optimal staffing levels:

- Staffing requirements should be based on the achievement of clear performance goals and productivity standards. For example, goals could be the percent of calls that will be answered within a certain number of seconds, the number of calls staff should handle per hour, or the percent of calls dispatched to emergencies within a specified time frame;
- Staff should be deployed so that staffing levels closely match the volume of incoming calls. That is, more staff should be assigned when call volume is high, and fewer staff should be assigned when call volume is low;

- Estimates of staffing requirements should take into consideration experience with vacations, sick leave, training, and other periods when staff will not be available for work. In other words, to compensate for staff absences, staff levels should be multiplied by a “leave factor” based on past experience of absences; and
- Staffing estimates should incorporate methods for achieving staff minimums when unexpected conditions occur. For example, methods could include using overtime, supervisors, or back-up staff to handle unexpectedly high call volume or to fill in for unexpected absences.

Operating Costs

The Communications Center is approved to fund 53 FTEs with a FY2013/14 personnel operating budget of \$5,646K. Beginning in FY2012/13, 25% percent of the Center’s monthly operating costs are transferred to the Fire Department/Operations Division. The Interim Communication Center Manager’s personnel costs are recorded in Police - Management Services and are not currently captured in the Center’s total personnel expenditures.

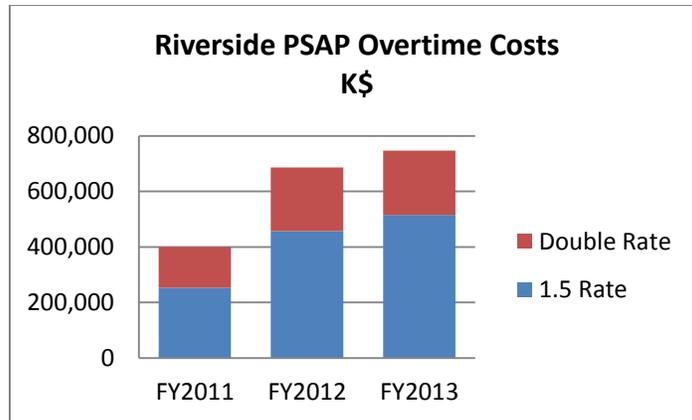


While total call volume, number of emergency calls, wireless calls and incidents dispatched by the Communication Center has slowly increased over the past few years, staffing levels have remained the same. The slight increase in Personnel costs year-to-year is mainly due to increased costs related to employee pension and benefits, as well as an increase in overtime.

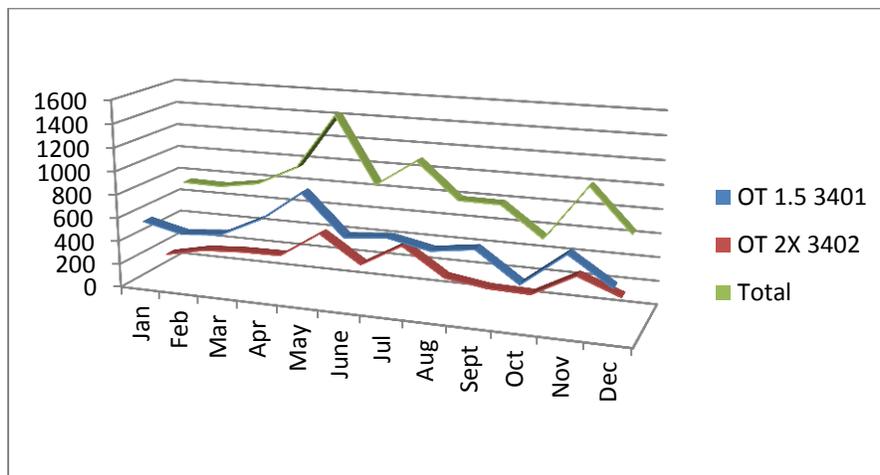
Overtime Costs

As previously noted, overtime is mandatory and part of the standard operating procedures for meeting minimum staffing needs at the Communications Center.

In the past three fiscal years, total overtime **has increased from 10% of total personnel costs in FY2011 to 14% in FY2012 and FY2013**. In FY2011/12 overtime at the 1.5 rate was \$457,422; overtime at double time was \$228,462. In FY2012/13 over time at the 1.5 rate was \$515,770; overtime at double time was \$231,431.



The chart below reflects 1.5 x and 2 x (double) overtime hours by month of calendar 2013.



Compensatory (comp) time off is earned in lieu of overtime pay. The combined use of overtime and comp time has a cyclical effect. The absences that occur from employees' use of comp time require the Center to use additional comp time and overtime to cover absences.

Call center/communication center experts agree that overtime should not be a strategic use of resources. According to the January 2012 issue of *Public Safety Communications*, "Excessive use of overtime is a major contributor to staffing and retention problems in the industry...loss of control over personal time contribute more to employee 'burnout' than the emotionally demanding nature of the job." Excessive reliance on overtime may be an indication that management is using a reactive approach rather than a proactive approach to handling the workload.

CONCLUSION

The Riverside Public Safety Communications Center is the Primary Public Safety Answering Point (PSAP) for the City. Each year the Center handles more than 400,000 emergency and non-emergency calls. Over the past few years, the Center and management has focused on technological and location improvements. Because of the critical public safety role performed by the Center, it is important that it be adequately staffed, funded, and organized appropriately to provide quick response to emergencies.

Determining appropriate staffing levels for a PSAP can be difficult and challenging. The staffing levels have remained flat for several years while call volume has steadily increased. We have encouraged RPD management to review staffing levels and their staffing model; and, if funding is available in FY2015, increase the total number of FTE dispatchers with a long-term (2-3 years) goal of reducing overtime hours and related costs and eliminating "mandatory" overtime.

During our review, we met with RPD management to discuss the review and our assessment. A draft report was provided; a meeting to discuss our assessment of the efficiency and effectiveness of activities and content of the draft report was conducted in February 2014. Comments and concerns during the discussion were evaluated prior to finalizing this report. Management concurs with our finding; their response is noted on the following page.

We would like to thank all of the personnel of the Riverside PSAP for the opportunity to review existing dispatch operations. The dispatchers take great pride and care in the handling of emergency calls. We received a tremendous amount of information which we recognize took a great deal of time and effort to compile. The information generated and presented in this report is a reflection of that effort. We believe this report will provide management with the necessary information to make informed and knowledgeable decisions for the Center and dispatch personnel in the future.

Respectfully,

Cheryl Johannes, Internal Audit Manager

FINDING and RECOMMENDATION

Lack of a documented *Abandoned Call* process could lead to inconsistent staffing responses to these types of 9-1-1 calls.

The NENA recommends each PSAP develop a standard and consistent policy for documenting and/or responding to abandoned calls. The current practices by the Riverside PSAP for an abandoned call or a 9-1-1 hang up have not been documented and formalized in the Center's Standard Operating Procedures.

Recommendation:

Formally document the Abandoned Call process in the Standard Operating Procedures (SOP) to ensure consistency among the dispatchers.

Management's Response

DATE: 03/24/2014

TO: CHERYL JOHANNES, INTERNAL AUDIT MANAGER

VIA: Mike Blakely, Deputy Chief
John Wallace, Captain

FROM: Patty Tambe, Interim Communications Manager

RE: PUBLIC SAFETY COMMUNICATIONS AUDIT #AU14-07

The Riverside Communication Bureau staff has reviewed the audit conducted by City Auditor, Cheryl Johannes. I concur with the conclusion of the audit that states that the Communication Center is challenged with staffing issues and needs to review staffing levels and staffing models. Over the past two years, I have been analyzing the staffing levels in the hopes of decreasing costs and mandatory overtime. This has been one of our major goals to reduce mandated overtime in order to increase the quality of service provided and the quality of life for staff.

The Riverside Communications Bureau also concurs with recommendation #1 that states the need to formally document the Abandoned Call process in the Standard Operating Procedures (SOP) to ensure consistency. This process will be drafted and incorporated into the Communications SOP by May 15, 2014.

Thank you for your understanding of our current business practices and I appreciate the time and effort you took to evaluate the efficiency and effectiveness of the Communications Center.

APPENDIX A

Public Safety Dispatchers' Basic Course Curriculum

Content and Minimum Hourly Requirements

Learning Domain	Domain Description	Minimum Hours
100	Professional Orientation and Ethics	8 hours
101	Criminal Justice System	4 hours
102	Introduction to Law	12 hours
103	Interpersonal Communication	4 hours
104	Telephone Technology and Procedures	12 hours
105	Missing Persons	4 hours
106	Domestic Violence	4 hours
107	Community Policing/Cultural Diversity/Hate Crimes/Gang Awareness	8 hours
108	Child, Elder and Dependent Adult Abuse	4 hours
109	Law Enforcement Telecommunications	8 hours
110	Radio Technology and Procedures	12 hours
111	Resources/Referral Services	2 hours
112	Critical Incidents	16 hours
113	Wellness Management	4 hours
	Minimum Domain Hours	102 hours
	Supporting Instructional/Activities - Exercises	18 hours
	Total Minimum Required Hours	120 hours